

Biomass Boiler Information Request Form (B)

In common with other types of combustion appliances, biomass boilers are potentially a source of air pollution. Pollutants associated with biomass combustion include particulate matter (PM₁₀/PM_{2.5}) and nitrogen oxides (NO_x) emissions. These pollution emissions can have an impact on local air quality and affect human health. It is essential that any new biomass boilers installed in Aberdeenshire Council meet certain emission control requirements in order to protect local air quality.

In order to approve a planning application associated with a biomass boiler, the following information below must be supplied to the local authority.

You may find the Carbon Trust publication 'Biomass heating: a practical guide for potential users' a useful companion when completing this form. The publication can be downloaded from <http://www.carbontrust.co.uk/publications/publicationdetail?productid=CTG012> (free registration required)

1. Development Details

a) Planning Application Reference	
b) Name of Site	AJ & AR Benzie
c) Address where boiler(s) will be located	Meikle Whiterashes, Turriff, Aberdeenshire, AB53 5RA
d) Person completing form	Dougie Shand
e) Contact telephone number	07715467299

2. Particulars of the Boiler

This information on the basic design of the system will help us assess the emissions performance. Biomass boilers often produce relatively high emissions when lightly loaded, hence the question regarding an accumulation tank (heat store). The boiler manufacturer and/ or installer should be able to help you provide this information.

f) Describe the proposed biomass boiler including make, model, manufacturer, thermal capacity (kw/MW), efficiency, maximum rate of fuel consumption (kg/hr or m³/hr).

Glenfarrow conversion 295Kw

efficiencyEfficiency – 85%

Maximum rate of consumption - woodchip: 300 kg/h
- straw: 279 kg/h

g) Describe the boiler combustion system and how combustion will be optimised and controlled.

Stoker auger fed fuel delivery with stepped grate combustion

Combustion optimised with boiler specific programming using O₂ levels as the primary control and over/under temperature as secondary control

h) Describe the fuel feed system.

Woodchip auger fed from store into stoker auger and thereby into combustion chamber

i) Provide details of the abatement equipment in place for controlling particulate matter (fly ash) emissions.

Cyclone filter takes out particulates prior to flue

Bag filter

j) How does the biomass boiler deal with variable heat loads – is the boiler linked to an accumulation tank?

Dryer which uses the heat will regulate heat requirement and boiler will modulate a limited degree to manage this.

k) Is the biomass boiler an exempt appliance in accordance with the Clean Air Act 1993? If yes provide evidence to demonstrate the biomass boiler has been tested and certified as an exempt appliance (for example a link to the appliance on the UK Smoke Control Areas website <http://www.uksmokecontrolareas.co.uk/appliances.php>)

No

3. Boiler Operation and Maintenance

System efficiency and emissions performance very much depend upon regular maintenance. Your installer should be able to recommend a suitable maintenance schedule.

l) Describe arrangements for cleaning and de-ashing the boiler.

Automatic de ashing walking grate into ash drop zone with ash scraper in boiler chamber pushing ash to an auger which delivers ash to a large bin. Bin emptied as required – usually daily

Heat exchanger tubes automatically cleaned using air-shot cleaning mechanism on a tube rotation basis and manually cleaned as per service sheet 500hrs, depending on fuel type.

Additional chamber cleaning carried out manually as required

m) Provide details of the maintenance schedule associated with boiler, abatement equipment and stack. This should include frequency of boiler inspection and servicing by a trained boiler engineer.

Daily, weekly and monthly maintenance and checks carried out by staff member employed by site.

Maintenance schedules by boiler supplier as per boiler maintenance schedule

n) Describe how incidences of boiler or abatement system failure are identified & mitigated.

Daily, weekly and monthly maintenance and checks carried out by staff member employed by site.

Faults repaired as soon as practically possible after identification

4. Boiler Stack Details

The design of the stack greatly affects how pollutants produced in the boiler disperse over the surrounding area. Where the area is heavily built up, or has existing air quality issues, dispersion becomes more complicated and a computer modelling technique known as dispersion modelling may be required. Your installer should be able to provide most of the details and make a calculation on stack height and design. When dispersion modelling is required you or your installer may need to engage a specialist consultant.

o) Identify the height of the boiler exhaust stack above ground.

12.7m metre stack from ground

p) Identify stack internal diameter (m).

0.25 m ID or 250mm

q) Provide maximum particulate matter and nitrogen oxides emission rates (mg/m^3 or g/hr) to standard reference conditions (6% oxygen, 273K, 101.3kPa).

PM - 56.5 mg/m³; NOx 115.3 mg/m³ @ STP 273K, 101.3kPa, 11% oxygen
PM - 85.0 mg/m³, NOx 173.5 mg/m³ @ 273K, 101.3kPa, 6% oxygen
See biomassmissionsscreeningtoolv7 GF295 NO2 1H Mean attached to email
biomassemissionsscreeningtoolv7 GF295 NO2 Annual attached to email
biomassemissionsscreeningtoolv7 GF295 PM10 Annual attached to email
biomassemissionsscreeningtoolv7 GF295 PM10 Combi attached to email

r) Identify the exhaust gas efflux velocity (m/s).

7.8 m/s

s) Provide the grid reference of boiler exhaust stack.

E364208 N 860092

5. Fuel Details

Emissions from a biomass boiler depend greatly on the type and quality of the fuel used. Reasonable guarantees are therefore needed that the fuel is compatible with the boiler, is of a high quality and that quality will be assured for a reasonable period of time. Your fuel supplier and installer should be able to provide this information.

t) Describe the fuel specification including origin, type of wood (chips, pellet, briquettes), nitrogen, moisture, ash content (%).

Woodchip from local supplier with moisture content less than 25%
Nitrogen content = 0.5% (By weight)
Ash content = 2.2% (By weight)

u) Does the fuel comply with European or equivalent fuel quality standards such as CEN/TS 335 or ONORM?

Yes – suitable for RHI support and emissions certificate controlled. Emissions certificate attached to email showing standard of fuel and emissions of NOx and PM

v) Describe what fuel quality control procedures will be adopted to guarantee constant fuel quality from your supplier.

wood chip checked on delivery. unsatisfactory woodchip sent back with supplier.

w) Provide evidence to demonstrate that the biomass boiler combustion system is applicable to the fuel specification.

See data sheet – attached to email

x) Identify where and how fuel will be stored on site (e.g. bunker or silo).

The woodchip will be stored in a bunker alongside where boiler is situated.

y) Describe how fuel will be unloaded from the delivery vehicle into the storage facility and what control measures will be in place to reduce particulate matter emissions to atmosphere.

tipped delivery via walking floor or tipper trailer for woodchip

6. Building Details

The height and distance of neighbouring buildings will determine their exposure to emissions from the biomass boiler, and therefore the height of the stack needed. Your architect should be able to provide this information.

z) Record the distance of adjacent buildings from boiler exhaust stack.

Distance between nearest dwelling and exhaust stack = 47 metres
Next nearest dwelling = 204 metres
Both dwellings are owned
Nearest dwelling not owned would be approx 1000 metres away
Flue to nearest building is 4.5m.

aa) Record the height of adjacent buildings from boiler exhaust stack.

9.5 metres

bb) Record the dimensions of building to which the boiler exhaust stack is attached.

no building.

cc) Indicate the distance from the boiler exhaust stack to the nearest fan assisted intakes and openable windows.

47m located on dwellinghouse occupied by applicant,

7. Plans

Please attach the following to this form:

- A site plan showing the location of the boiler room, fuel storage area and the access and exit route for fuel delivery vehicles, and
- A site plan showing the position of the boiler exhaust stack, fan assisted intake air vents and nearest openable windows.

PLEASE SEE ARCHITECTS PLANS THAT WERE SENT TO THE PLANNING DEPARTMENT

8. Returning this form

Please return this form to:

environmental@aberdeenshire.gov.uk

Further guidance documents and tools are available to download from www.environmental-protection.org.uk/biomass, or contact Environmental Protection UK, 44 Grand Parade, Brighton BN2 9QA – phone 01273 878770]